

Remarks

Claims 10, 11, 15-17, 22-49, 51, 52, 57, 61, 66, 70, 72, 74, 76, 78, 83 and 84 are cancelled herein, without prejudice or disclaimer. The amendment to claims 1 and 71, find support, for example in paragraphs [0041] to [0046] of the pending application. Amended claims 18, 73, and 75 find support, for example in paragraphs [0047] to [0051] of the pending application. Claims 85-100 are newly added. Claims 85-87, 91 and 94-100 find support, for example throughout Figures 1-8. Claims 88-90 and 92-3 find support, for example in paragraph [0055] of the pending application. Upon entry of the Amendment, claims 1-9, 12-14, 18-21, 50, 53-56, 58-60, 62-65, 67,69, 71, 73, 75, 77, 80-82, and 85-100 will be pending and under examination.

Claim Rejection - 35 U.S.C. §102

Tocci (U.S. Patent No. 3,715,295)

Claim 1-4, 16, 17, 27, 29, 30, 45-47 and 51 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Tocci (U.S. Patent No. 3,715,295). The Office Action alleges that Tocci discloses an electrophoresis unit comprising a chamber defining an electrophoresis area, comprising a gel matrix and two sealed regions; and an anode and cathode disposed in the two sealed regions, in contact with the gel matrix. To anticipate an invention, each and every element of a claim must be found in a single prior art reference. MPEP § 2131; *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Claims 16, 17, 27, 29, 30, 45-47 and 51, are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims. With respect to pending claims 1-4, Applicants respectfully assert that Tocci does not disclose a disposable cassette with the elements set forth in these claims. Claims 1-4 are directed to a disposable cassette that includes a chamber having a top wall that has one or more apertures and an electrophoresis gel matrix having one or more wells located below the apertures in the top wall, and wherein the chamber include three regions, one which includes the apertures, and two other regions. In contrast the electrophoresis unit of Tocci does not include one or more apertures in the top wall or a gel matrix having one or more wells located below the apertures. In Tocci a lid is placed over the separation support

media after the application of the sample to the support media (see col. 2, 31-63). In addition, Tocci discloses that at the time of use a buffer is spread on the support medium, for example using a wiper or by blotting with a towellette (see col. 2, lines 55-64, col. 3, lines 14-17 and col. 3, lines 64-65). The sample to be separated is then applied to the support medium. A lid is then fitted onto the tank. Thus, Tocci does not disclose that the lid has openings (apertures) or that the support medium has wells located below the apertures for the loading of sample. In fact, Tocci teaches away from having a lid with one or more apertures in teaching that samples are loaded in their device while the lid is NOT in place, and in teaching embodiments where a buffer is spread on a support medium within the device using a blotting device, which would require access to the entire surface of the support medium.

The remaining pending claims of this rejection depend from claim 1. Therefore, the remaining pending claims under this rejection are not anticipated by Tocci. Accordingly, Applicants find it unnecessary to comment on all of the specific assertions in the Office Action with respect to the dependent claims. This is in no way an admission that the Applicants agree with any of these assertions in the Office Action.

With respect to claim 2, the Applicant asserts that Tocci does not disclose the recited element that either or both the second region and the third region are sealed. Tocci only discloses that the “The support will rest in electrical contact with the semi-solid buffer in the wells.” (see col. 3, lines 64-65, emphasis added). The Examiner states that “e.g. Figures 4 and 5-electrode 8 folds out, then is held in position for electrophoresis by the lid after sealing;...” (see page 3, lines 10-14 of the Office Action). However, in the description of Figures 4 and 5 Tocci states “FIG. 5 is a view similar to FIG. 4 and shows the foil electrode 8 in its folded out operable position whereby it resides between the complementary engaging wall surfaces of the lid 5 and chamber 1” (see col. 4, line 63 to col. 5, line 4). Tocci does not state that the lid seals the electrodes in place, merely that the lid and the chamber are complementarily engaged. Furthermore, Tocci states that the lid rests on top of the chambers (Col. 4, lines 33-36).

Regarding claims 3 and 4, Tocci does not disclose an electrophoresis cassette which includes electrochemically ionizable electrodes, wherein the electrochemical ionizable electrodes are electrochemically ionizable during electrophoresis.

In summary, pending claims 1-4, 16, 17, 27, 29, 30, 45-47 and 51 are not anticipated by Tocci (U.S. Patent No. 3,715,295). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 1-4, 16, 17, 27, 29, 30, 45-47 and 51 under 35 U.S.C. §102(b) as allegedly being anticipated by Tocci (U.S. Patent No. 3,715,295).

Pace (U.S. Patent No. 4,908,112)

Claim 1-6, 9, 15-17, 21, 27, 29-32, 37, 44-49, 51, 52, 71 and 72 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Pace (U.S. Patent No. 4,908,112). The Office Action asserts with respect to claims 1, 16, and 27 that Pace discloses an electrophoresis unit that includes a chamber defining an electrophoresis area, comprising a gel matrix and sealed regions; and anodes and cathodes disposed in sealed regions in contact with the gel matrix. With respect to claims 71 and 72, the Office Action asserts that the Pace discloses a method comprising the steps of applying an electrical field to his gel, through copper or silver electrodes. The Office Action further asserts that given a high enough voltage, the release of anode ions instead of water electrolysis would be inherent.

Claims 15-17, 27, 29-32, 37, 44-52 and 72 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

Pending claims 1-6, 9, 21 and 71 are directed toward an electrophoresis cassette or method using such cassette, wherein the cassette includes a chamber having a top wall that has one or more apertures, wherein the chamber contains electrodes (anode(s) and cathode(s)) and an electrophoresis gel matrix having one or more wells located below the apertures in the top wall, and wherein the chamber include three regions, one which includes the apertures, and two other regions. The region containing the apertures is located between the other two regions.

Pace discloses a device for capillary electrophoresis that includes a semiconductor substrate having one or more channels micromachined therein. Pace provides at most two embodiments of the capillary electrophoresis device, neither of which includes an electrophoresis gel matrix having one or more wells located below apertures in a top wall. Furthermore, Pace does not disclose a device having three regions, one region that

includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Accordingly, Pace does not disclose all of the elements of the pending independent claims in this rejection, claims 1 and 71.

The remaining pending claims of this rejection depend from claim 1. Therefore, the remaining pending claims under this rejection are not anticipated by Pace. Accordingly, Applicants find it unnecessary to comment on all of the specific assertions in the Office Action with respect to the dependent claims. This is in no way an admission that the Applicants agree with any of these assertions in the Office Action.

In summary, claims 1-6, 9, 15-17, 21, 27, 29-32, 37, 44-49, 51, 52, 71 and 72 are not anticipated by Pace (U.S. Patent No. 4,908,112). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 1-6, 9, 15-17, 21, 27, 29-32, 37, 44-49, 51, 52, 71 and 72 under 35 U.S.C. §102(b) as allegedly being anticipated by Pace (U.S. Patent No. 4,908,112).

Claim Rejection - 35 U.S.C. §103

Tocci (U.S. Patent No. 3,715,295) in view of Pace (U.S. Patent No. 4,908,112)

Claims 5, 6, 9, 31, 32, 48, 49, and 51 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci in view of Pace. The requirement for establishing a *prima facie* case of obviousness under 35 U.S.C. §103(a) include the following: 1) each and every element of the claimed invention must be taught or suggested by the cited reference; 2) there must be a suggestion or motivation to combine the cited references; 3) one of ordinary skill in the art must have a reasonable expectation of success in combining or modifying the teachings of the cited reference to arrive at the claimed invention. (MPEP 2142).

The Office Action refers to its assertions regarding Tocci in the rejection under 35 U.S.C. 102, but concedes that Tocci does not disclose any specific metals for the electrodes. The Office Action asserts that Pace disclosed copper and silver electrodes and asserts that it would have been obvious to modify the device of Tocci by using silver

electrodes because it would reduce the cost to manufacture the device and would only be a matter of choice.

Claims 31 and 48 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 5, 6, and 9, which depend from claim 1, as indicated above, Tocci does not disclose all of the elements recited in pending claim 1. More specifically, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Furthermore, Pace does not provide these missing elements. Pace provides at most two embodiments of the capillary electrophoresis device, neither of which includes an electrophoresis gel matrix having one or more wells located below apertures in a top wall. Furthermore, Pace does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode.

Additionally, it is improper to combine Pace with Tocci, because the technologies are fundamentally different, with Pace directed to a capillary electrophoresis device and Tocci directed to an electrophoresis unit that includes a layer of support media. Finally, specifically with respect to claims 5, 6, and 9, Tocci teaches away from using copper, silver, or lead in teaching the use of a platinum or nichrome electrode (Col. 3, lines 45-46).

In summary, the deficiencies of Tocci. (U.S. Patent No. 3,715,295) are not remedied by Pace (U.S. Patent No. 4,908,112). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 5, 6, 9 and 31 under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci. (U.S. Patent No. 3,715,295) in view of Pace (U.S. Patent No. 4,908,112). Claim 51 has been cancelled. Therefore, the rejection is moot with respect to this claim.

Tocci (U.S. Patent No. 3,715,295) in view of Eibl (U.S. Patent No. 3,951,776)

Claim 7-9, 33, 34 and 50 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci in view of Eibl. The Office Action refers to its assertions regarding Tocci in the rejection under 35 U.S.C. 102, but concedes that Tocci does not

disclose any specific metals for the electrodes. The Office Action asserts that Eibl disclosed aluminum electrodes and asserts that it would have been obvious to modify the device of Tocci by using aluminum electrodes because it would reduce the cost to manufacture the device and it would only be a matter of choice.

Claims 33 and 34 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 7-9, which depend from claim 1, as indicated above, Tocci does not disclose all of the elements recited in pending claim 1. More specifically, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Furthermore, Eibl does not provide these missing elements. Eibl provides an electrophoresis apparatus that uses aluminum electrodes, but does not provide a disposable cassette having one or more apertures in a top wall. Furthermore, Eibl does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Finally, specifically with respect to claims 5, 6, and 9, Tocci teaches away from using an aluminum electrode in teaching the use of a platinum or nichrome electrode (Col. 3, lines 45-46).

In summary, the deficiencies of Tocci. (U.S. Patent No. 3,715,295) are not remedied by Eibl (U.S. Patent No. 3,951,776). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 7-9, 33, 34 and 50 under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci. (U.S. Patent No. 3,715,295) in view of Eibl (U.S. Patent No. 3,951,776).

Pace (U.S. Patent No. 4,908,112) in view of Eibl (U.S. Patent No. 3,951,776)

Claim 7, 8, 33, 34, and 50 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace in view of Eibl. The Office Action refers to its assertions regarding Pace in the rejection under 35 U.S.C. 102, but concedes that, although Pace discloses using various conductors for electrodes, Pace does not disclose using aluminum, carbon, or any other oxygen absorbing material for the electrodes. The Office Action asserts that Eibl disclosed aluminum electrodes and asserts that it would have

been obvious to modify the device of Pace by using aluminum electrodes because it would reduce the cost to manufacture the device and it would only be a matter of choice.

Claims 33, 34 and 50 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 7 and 8, which depend from claim 1, as indicated above, Pace does not disclose all of the elements recited in pending claim 1. More specifically, Pace does not disclose a gel matrix having one or more wells located below the apertures in a top wall. Furthermore, Pace does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode.

Eibl does not provide these missing elements. Eibl provides an electrophoresis apparatus that uses aluminum electrodes, but does not provide an electrophoresis cartridge having one or more apertures in a top wall located above one or more wells. Furthermore, Eibl does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode.

Additionally, it is improper to combine Pace with Eibl, because the technologies are fundamentally different, with Pace directed to a capillary electrophoresis device and Eibl directed to an electrophoresis unit that includes a layer of separation media.

In summary, the deficiencies of Pace (U.S. Patent No. 4,908,112) are not remedied by Eibl (U.S. Patent No. 3,951,776). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 7, 8, 33, 34, and 50 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace (U.S. Patent No. 4,908,112) in view of Eibl (U.S. Patent No. 3,951,776).

Tocci (U.S. Patent No. 3,715,295) in view of Flesher (U.S. Patent No. 4,773,984)

Claim 19-21, 35, and 36 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci in view of Flesher *et al.* The Office Action refers to its assertions regarding Tocci in the rejection under 35 U.S.C. 102, but concedes that Tocci does not disclose any specific metals for the electrodes. The Office Action asserts that Flesher disclosed palladium electrodes and asserts that it would have been obvious to

modify the device of Tocci by using palladium electrodes because they are highly resistant to corrosion and it would only be a matter of choice.

Claims 35 and 36 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 19-21, which depend from claim 1, as indicated above Tocci does not disclose all of the elements recited in pending claim 1. More specifically, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Fleisher does not provide these missing elements. Fleisher provides a vertical electrophoresis apparatus that can use palladium electrodes, but does not provide a disposable cassette having one or more apertures in a top wall. Furthermore, Fleisher does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Finally, specifically with respect to claims 19-21, Tocci teaches away from using an palladium electrode in teaching the use of a platinum or nichrome electrode (Col. 3, lines 45-46).

In summary, the deficiencies of Tocci. (U.S. Patent No. 3,715,295) are not remedied by Fleisher (U.S. Patent No. 4,773,984). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 19-21, 35, and 36 under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci. (U.S. Patent No. 3,715,295) in view of Fleisher (U.S. Patent No. 4,773,984).

Pace (U.S. Patent No. 4,908,112) in view of Fleisher (U.S. Patent No. 4,773,984)

Claim 19, 20, 35, and 36 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace in view of Fleisher *et al.* The Office Action refers to its assertions regarding Pace in the rejection under 35 U.S.C. 102, but concedes that, although Pace discloses using various conductors for electrodes, Pace does not disclose using palladium, carbon, or any other hydrogen absorbing material for the electrodes. The Office Action asserts that Fleisher disclosed palladium electrodes and asserts that it would have been obvious to modify the device of Pace by using palladium electrodes because they are highly resistant to corrosion and it would only be a matter of choice.

Claims 35 and 36 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 19 and 20, which depend from claim 1, as indicated above, Pace does not disclose all of the elements recited in pending claim 1. More specifically, Pace does not disclose a gel matrix having one or more wells located below the one or more apertures in a top wall of a disposable cassette. Furthermore, Pace does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Flesher does not provide these missing elements. Flesher provides a vertical electrophoresis apparatus that can use palladium electrodes, but does not provide an electrophoresis cartridge having one or more apertures in a top wall. Furthermore, Flesher does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode.

Additionally, it is improper to combine Pace with Flesher, because the technologies are fundamentally different, with Pace directed to a capillary electrophoresis device and Flesher directed to a vertical electrophoresis unit.

In summary, the deficiencies of Pace (U.S. Patent No. 4,908,112) are not remedied by Flesher (U.S. Patent No. 4,773,984). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 19, 20, 35, and 36 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace (U.S. Patent No. 4,908,112) in view of Flesher (U.S. Patent No. 4,773,984).

Tocci (U.S. Patent No. 3,715,295) in view of Elson (U.S. Patent No. 3,888,759)

Claim 10, 11, 22, 23, and 38-40 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci in view of Elson *et al.* The Office Action refers to its assertions recited above, with respect to claims 1, 16, and 27 in its reasons for rejection, but concedes that Tocci does not disclose apertures in the cover of their unit for sample loading. However, the Office Action asserts that Elson *et al.* disclose a gel cassette wherein samples are applied to the gel through apertures provided in the cover of the gel cassette. Furthermore, the Office Action asserts that it would have been obvious to

modify the unit of Tocci by providing a row of apertures as taught by Elson, because according to the Office Action, Elson et al teaches the advantages of this design in allowing for a range of sample volumes and allows samples to be applied without opening the instrument. Applicants respectfully disagree with these assertions.

Claims 10, 11, 22, 23 and 38-40 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims. However, since claim 1, now recites that the disposable cassette includes a top wall comprising one or more apertures, and includes a gel matrix that includes one or more wells located below the one or more apertures, Applicants comment on the assertions made in the Office Action with respect to Tocci in view of Elson et al..

As indicated above, Tocci does not disclose all of the elements recited in pending independent claims 1 and 71. More specifically, as conceded in the Office Action, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit. Furthermore, Tocci does not disclose a gel matrix having one or more wells located below the apertures. Although the Office Action cites Elson et al. for teaching applying samples to gels through apertures in the cover of a gel cassette, it is improper to combine Tocci with Elson et al. because there is no motivation or suggestion to combine the references.

There is no suggestion or motivation to combine Tocci and Elson et al. because there would be no benefit in using Elson et al.'s lid with the electrophoresis unit of Tocci. The Office Action asserts that the motivation is provided by the range of sample volumes provided by the lid of Elson et al. as well as the ability to apply samples without opening the instrument. However, Tocci discloses that at the time of use a buffer is spread over the support medium, for example using a wiper or by blotting with a towellette (see col. 2, lines 55-64, col. 3, lines 14-17 and col. 3, lines 64-65). This would require access to the user, across the face of the support medium. Therefore, the lid of Tocci needs to be removed before use so that a buffer can be spread over the support medium. Accordingly, there would be no advantage to having a lid with apertures, since the sample is loaded while the lid is removed to gain access to the support medium for wetting according to Tocci.

In addition to the reason above, there is no motivation or suggestion to combine Tocci with Elson et al., because Tocci does not teach a support medium with wells, and therefore, there would be no advantage to having a lid with a row of apertures. Tocci discloses that the sample is applied to the separation medium, but does NOT indicate that samples are loaded into wells in the medium (see col. 3, lines 15-17). Accordingly, there is no motivation or suggestion to include a lid with a row of apertures on top of a support medium that does not have wells.

Tocci teaches away from being combined with Elson et al. to obtain the device disclosed therein with the lid of Elson et al. Tocci states that “In FIG. 3 a lid 5 is illustrated in position upon the chamber 1 to effectively enclose the chamber to air to avoid substantial evaporation therefrom” (see col. 4, lines 55-57 emphasis added). Thus, since the purpose of the lid in Tocci is to “avoid evaporation” then it is not desirable to include apertures in the lid. Therefore there is no suggestion or motivation to combine Tocci and Elson to obtain the Applicant’s electrophoresis cassette.

Although, claims 10, 11, 22, 23, and 38-40 have been cancelled and the rejection is moot with respect to these claims. The Applicant assert that the deficiencies of Tocci (U.S. Patent No. 3,715,295) are not remedied by Elson et al. (U.S. Patent No. 3,888,759) because there is no suggestion or motivation to combine these references. Accordingly, the Applicant respectfully assert that the pending claims are patentable over (U.S. Patent No. 3,715,295) in view of Elson (U.S. Patent No. 3,888,759), and withdrawal of the rejection of claims 10, 11, 22, 23, and 38-40 is respectfully requested.

Tocci (U.S. Patent No. 3,715,295) in view of Elson (U.S. Patent No. 3,888,759) in further view of Day (UK Patent Application GB 2,284,484)

Claim 12-14, 24-26, and 41-43 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci and Elson *et al.* in view of Day. In its rejection, the Office Action cites its assertions, as set out above, with respect to the combination of Tocci in view of Elson. With regard to the recited elements that the top wall includes apertures which are spaced at predetermined intervals such as the intervals between tips on a loader or arranged in a stagger format, the Office Action concedes that neither Tocci nor Elson et al. disclose the recited claim elements. However, the Office Action asserts

that these elements are taught by Day. The Office Action further asserts that it would have been obvious to one having ordinary skill in the art to provide multiple, staggered rows of sample well, as taught by Day, because Day allegedly teaches that this arrangement allows a much more efficient use of the gel space.

Claims 24-26 and 41-43 have been cancelled. Therefore, the rejection is moot with respect to these claims.

As discussed above regarding the combination of Tocci and Elson et al., the Applicants respectfully assert that there is no suggestion or motivation to combine Tocci and Elson et al. to obtain the Applicant's electrophoresis cassette. Furthermore, the disclosure of Day does not remedy the deficiencies of Tocci and Elson et al. As indicated above, there is no suggestion or motivation to combine Tocci and Elson et al. because there would be no benefit in using Elson et al.'s lid with the electrophoresis unit of Tocci because in Tocci the lid is opened to provide access to wet the surface of the support. Furthermore, Tocci teaches away from being combined with Elson et al. to obtain the device disclosed therein with the lid of Elson et al., in teaching that the advantage of a lid would be to avoid evaporation. Nothing in Day changes the fact that Tocci teach removal of the lid during to gain access to the surface of the support, which therefore renders useless having holes in the lid for sample loading. Furthermore, nothing in Day changes the disadvantage of a lid with holes in that some evaporation will occur. Therefore, the deficiencies of Tocci (U.S. Patent No. 4,908,112) are not remedied by Elson et al. (U.S. Patent No. 3,888,759) or Day (UK Patent Application GB 2,284,484), either alone or in combination. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 12-14, 24-26, and 41-43 under 35 U.S.C. §103(a) as allegedly being unpatentable over of Tocci (U.S. Patent No. 4,908,112) in view of Elson (U.S. Patent No. 3,888,759) in further view of Day (UK Patent Application GB 2,284,484).

Tocci (U.S. Patent No. 3,715,295) in view of Pace (U.S. Patent No. 4,908,112) and Monthony et al. (U.S. Patent No. 3,948,743)

Claim 53-56 and 62-65 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci in view of Pace and in further view of Monthony et al. The Office Action refers to its assertions regarding Tocci in the rejection under

35 U.S.C. 102, but concedes that Tocci does not disclose copper or silver electrodes. The Office Action asserts that Pace disclosed copper and silver electrodes. The Office Action also asserts that Monthony et al. disclosed an electrophoresis method that used Tri-Glycine buffer. The Office Action asserts that it would have been obvious to modify the device of Tocci by using copper or silver electrodes because it would reduce the cost to manufacture the device and would only be a matter of choice, and it would have been obvious to modify the device of Tocci by using the buffer system disclosed by Monthony et al. because Tocci did not disclose a specific buffer system.

With respect to claims 53-56 and 62-65 which depend from claim 1, as indicated above, Tocci does not disclose all of the elements recited in pending claim 1. More specifically, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Furthermore, Pace does not provide these missing elements. Pace provides at most two embodiments of the capillary electrophoresis device, neither of which includes an electrophoresis gel matrix having one or more wells located below apertures in a top wall. Furthermore, Pace does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Monthony et al. do not provide the missing elements of Tocci and Pace. Monthony et al. describe an electrophoresis method, but do not provide a disposable cassette having one or more apertures in the top wall, or a gel matrix having one or more wells located below the apertures.

Additionally, it is improper to combine Pace with Tocci, because the technologies are fundamentally different, with Pace directed to a capillary electrophoresis device and Tocci directed to an electrophoresis unit that includes a layer of separation media. Nothing in Monthony et al. changes this conclusion. Finally, specifically with respect to claims 53-56 and 62-65, Tocci teaches away from using copper, silver, or lead in teaching the use of a platinum or nichrome electrode (Col. 3, lines 45-46).

In summary the deficiencies of Tocci (U.S. Patent No. 3,715,295) are not remedied by Pace (U.S. Patent No. 4,908,112) or Monthony et al. (U.S. Patent No. 3,948,743), either alone or in combination. Accordingly, the Applicant respectfully

requests withdrawal of the rejection of claims 53-56 and 62-65 under 35 U.S.C. §103(a) as allegedly being unpatentable over Tocci (U.S. Patent No. 3,715,295) in view of Pace (U.S. Patent No. 4,908,112) in further view of Monthony et al. (U.S. Patent No. 3,948,743).

Pace (U.S. Patent No. 4,908,112) in view of Monthony et al. (U.S. Patent No. 3,948,743)

Claim 53-57, 61-66, 70, and 77-84 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace and in view of Monthony *et al.* The Office Action refers to its assertions regarding Pace in the rejection under 35 U.S.C. 102, and asserts that Pace disclosed copper and silver electrodes and apertures corresponding to loading sites. The Office Action also asserts that Pace disclosed multiple anodes and cathodes and asserts that Pace disclosed an electrophoretic method using copper or silver electrodes. The Office Action concedes that Pace does not disclose any particular buffer. The Office Action asserts that Monthony *et al.* disclosed an electrophoresis method using Tris-Glycine buffer and asserts that it would have been obvious to modify the device of Pace by using the buffer system disclosed by Monthony et al., because pace did not disclose a specific buffer..

Claims 57, 61 66, 70, 78, 83 and 84 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 53-56, 62-65, 77, and 79-82, which depend from claim 1, as indicated above, Pace does not disclose all of the elements recited in pending claim 1. More specifically, Pace does not disclose a gel matrix having one or more wells located below the apertures in a top wall of a disposable cassette. Furthermore, Pace does not disclose a device having three regions, one region that includes the apertures and is located between a second region and a third region, wherein the second region and the third region include an electrode. Furthermore, Monthony does not provide these missing elements. Monthony et al. disclose an electrophoresis method, but does not provide a disposable cassette having one or more apertures in a top wall. Furthermore, Monthony et al. do not disclose a device having three regions, one region that includes the apertures

and is located between a second region and a third region, wherein the second region and the third region include an electrode.

In summary, the deficiencies of Pace (U.S. Patent No. 4,908,112) are not remedied by Monthony et al. (U.S. Patent No. 3,948,743). Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 53-56, 62-65, 77 and 79-82 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pace (U.S. Patent No. 4,908,112) in view of Monthony et al. (U.S. Patent No. 3,948,743).

Double Patenting

In the pending Office Action, claims 18, 28 and 71-76 were rejected under the judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over claim 15 of U.S. Patent No. 6,379,516 in view of Tocci.

The Office Action also concedes that claim 15 of U.S. Patent No. 6,379,516 does not disclose the location of electrodes in sealed region. The Office Action asserts that Tocci disclosed sealing an electrophoresis apparatus and asserts that it would have been obvious to modify the device of claim 15 of U.S. Patent No. 6,379,516 by sealing the chamber because it reduces solvent evaporation.

Claims 28, 72, 74 and 76 are canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 18, 71, 73 and 75, claim 15 of U.S. Patent No. 6,379,516 does not recite one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Furthermore, Tocci does not disclose one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Therefore, Applicants respectfully assert that it would not be obvious to combine the device of U.S. Patent No. 6,379,516 and Tocci to obtain Applicant disposable cassette. Accordingly, Applicant respectfully assert that the obviousness-type double patenting rejection is improper and respectfully request withdrawal of the rejection of claims 18, 28 and 71-76 under the

judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over claim 15 of U.S. Patent No. 6,379,516 in view of Tocci.

In the pending Office Action, claims 77-80 were rejected under the judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over claims 30 and 31 of U.S. Patent No. 6,379,516 in view of Monthony *et al.*

The Office Action also asserts that it would have been obvious to use the buffers taught by Monthony *et al.* in claims 30 and 31 of U.S. Patent No. 6,379,516

Claims 78 is canceled herein, without prejudice or disclaimer. Accordingly, the rejection is moot with respect to these claims.

With respect to claims 79 and 80, claims 30 and 31 of U.S. Patent No. 6,379,516 do not recite methods using a disposable cassette having one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Furthermore, Monthony does not disclose methods using electrophoresis cartridges having one or more apertures in the top wall of their electrophoresis unit, or a gel matrix having one or more wells located below the apertures. Therefore, Applicants respectfully assert that it would not be obvious to combine the methods of U.S. Patent No. 6,379,516 and Monthony *et al.* to obtain Applicant electrophoresis method. Accordingly, Applicant respectfully assert Accordingly, Applicant respectfully assert that the obviousness-type double patenting rejection is improper and respectfully request withdrawal of the rejection of claims 79 and 78 under the judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over claims 30 and 31 of U.S. Patent No. 6,379,516 in view of Monthony *et al.*

With respect to claims 77, the Applicants will file a Terminal Disclaimer when the pending claims are otherwise allowable.

Conclusion

In view of the amendments to the claims Applicants respectfully submit that all of the pending claims are in condition for allowance. Therefore, Applicants respectfully request withdrawal of each rejection and allowance of the present application.

This response is accompanied by a Petition for Extension of Time of Two (2) Months with a fee of \$450.00, and this response is accompanied by a request for continued examination with a fee of \$790.00 . It is believed that a total of \$12400.00 in fees is due. It is not believed that any further fees or extensions of time are necessary in connection with this paper. However, the Patent Office is authorized to deduct any fees required for this submission from, or deposit any overpayment into, the Deposit Account No. 503994. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

Respectfully submitted,

Date September 26, 2006

/Daniel E. Raymond, Reg. # 53,504/

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